SOME HYDROBIOLOGICAL CHARACTERISTICS OF THE SURF REGION OF WEST HILL, CALICUT

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ABSTRACT

The note presents some hydrobiological characters of the surf waters of Calicut for the three years 1975-78, with special emphasis on the postlarval fish and prawns.

Though hydrobiological features of the Calicut coast was investigated by Hornell and Nayudu (1923), Bhimachar and George (1950), George (1953) and Subrahamaniyan (1953 and 1954), no information is available on the surf waters of Calicut.

Biweekly collections were made from the surf region opposite to the Research Centre of Central Marine Fisheries Research Institute, Calicut, for three years from June 1975 to May 1978. The collections were made with a 1 m x 60 cm rectangular velon screen net of mesh 0.3 mm. The length of the net was 2 metres. The net was dragged along the surf for about 50 metres and the collections were analysed mostly in fresh condition.

The abundance of post larvae of prawns, zooplankton and the fish seeds are expressed qualitatively. To indicate the abundance of fish seeds in surf the terms plenty, large number, fairly large, fair number, few number and a few were respectively used when their averages per haul were above 1000, 501 to 1000, 101 to 500, 51 to 100, 10 to 50 and less than 10 numbers. However, to express the qualitative abundance of the post larvae of prawns and other zooplankton the terms plenty, large number, fairly large, fair number, few number and a few are used for the monthly average numbers collected per haul above 5000, 1001 to 5000, 501 to 1000, 101 to 500, 10 to 100 and less than 10 respectively. The hydrological data were taken whenever the plankton collections were made.

Occurrence of the seeds of fishes and prawns in the surf: The fry of the mullet *Liza subviridis* measuring 15-20 mm occurred throughout the year in the surf

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with a peak from July to September. Few numbers of the seeds of *Chanos chanos* measuring 10-15 mm were collected during March-April, 1978. *Sillago sihama* measuring 10-13 mm were observed in January and July. Leptocephalus stage of the *Megalops cyprinoides* also occurred, almost through out the year with a peak during May to June. The juveniles of *Lates calcarifer* were encountered during March. *Ambassis gymnocephalus* occurred in plenty, during all the months with a peak during September to March. *Engaulis tri* were in plenty during December and January though found throughout the year. The juveniles of *Therapon jarbua* were found during all the months except July to September. Other seeds of fishes collected from the surf were juveniles of *Polynemus plebius* (13-16 mm), *Leiognathus bindus* (12-13 mm), *Johnieops sina* (18-22 mm) *Gynoglossus dubius* (20-28 mm), *Otolithoides biaurites* (20-25 mm), *Gerrus filamentosus* (13-15 mm) and *Sphyraena jello* (13-16 mm).

The post larvae of the penaeid prawns were one of the important constituents of the surf collection. Though they occurred throughout the year their abundance was observed to be seasonal. The post larvae of *Penaeus indicus* measuring 7-8 mm were collected during all the months of the year, the peak seasons being February-May and September-December. However, there was considerable variation between the years. *Penaeus monodon* (9-13 mm) occurred in a few numbers during March to May and November to December. Post larvae of *Metapenaeus dobsoni* also occurred in the surf with two peak seasons, one from April to May and another from November to December. Seed of *Metapanaeus monoceros* was also found to occur more or less during the same period.

Seasonal fluctuation of the zooplankton in the surf: *Lucifer* sp. was one of the commonly occurring zooplankton in the surf. It was found in plenty during November and in large numbers during December and from February to May. *Acetes* sp, was observed in fair numbers during May to June and from August to October. The copepod *Acartia* sp. was found in a few numebers during January, July and August. A few numbers of *Temora turbinata* were collected almost all the months except April and May. Only during January 1976 they were collected in large numbers. The *Phylochaetopterus* sp. were found to occur in large numbers during May. During this month they were washed ashore forming a mat of 2-4" thick along the shore. Other planktonic organisms like the comb-jelly, *Pleurobrachia* sp, were observed during January, May, June, October to December in a few numbers. Only during October 1975 it occurred in fair numbers. Another jelly fish, *Beroe* sp., was found during November in fair numbers. A few numbers of *Sagitta* sp. were also found during November.

The occurrence of 'bloom' of dinoflagellates in the inshore waters and the surf causing red colouration was an annual feature. The bloom of *Gymnodium* sp. was found to occur during November and December. The bloom of

TABLE 1. *Temperature, Salinity and dissolved oxygen of the surf During* 1975-1978.

		Monthly average			3 year average		
		T.C°	S (sppm)	O ml|l	T.C°	S. (ppm)	O. (ml|l
	1976	28.4	32.0	4.1			
January	1977	29.4	35.8	4.4	28.9	33.8	4.0
	1978	29.1	33.6	3.7			
	1976	29.6	31.6	4.4			
February	1977	30.5	33.9	4.2	30.1	33.3	3.9
	1978	30.2	34.4	3.3			
	1976	31.1	32.6	4.2			
March	1977	31.3	33.5	4.4	30.8	33.6	4.0
	1978	30.2	34.8	3.5			
	1976	32.6	32.6	4.5			
April	1977	31.0	31.0	4.2	31.6	32.7	4.2
	1978	31.2	34.4	3.9			
	1976	29.7	32.6	4.4			
May	1977	29.5	31.0	4.3	29.9	32.7	3.7
	1978	30.7	35.1	2.4			
	1975	30.	22.0	4.6			
June	1976	29.5	32.0	5.0	28.8	27.9	4.5
	1977	26.9	29.8	4.0			
	1975	31.0	30.6				
July	1976	27.5	31.7	4.3	28.3	29.5	4.0
	1977	25.9	26.3	3.8			
	1975	29.0	28.5	3.4			
August	1976	27.2	33.7	5.7	27.5	30.7	4.2
	1977	26.4	29.8	4.3			
	1975	27.7	28.2	3.2			
September	1976	27.1	34.3	4.3	27.4	31.6	3.9
	1977	27.6	32.5	4.4			
	1975	28.1	29.6	4.3			
October	1976	29.3	32.8	4.5	28.6	32.0	4.1
	1977	28.6	33.8	3.5			
	1975	29.1	30.7	4.3			
November	1976	30.2	31.9	4.1	29.7	32.0	4.0
	1977	30.0	33.4	3.6			
	1975	29.9	31.4	4.1			
December	1976	31.5	29.8	4.1	30.2	31.6	4.0
	1977	30.0	33.8	3.9			

T = Temperature; S salinity; O Dissolved oxygen

Noctiluca miliaris was observed during August and September. The occurrence of the bloom of the *Hornellia marina* was more regular and intense. It was found during all the years of the observation after the S. W. monsoon extending up to December. Often it caused mass mortality of fishes in the inshore waters and in the fish farms adjacent to the esturaries.

The monthly average dissolved oxygen in the surf waters of Calicut ranged between 1.2 to 5.8 ml|1. The dissolved oxygen was low during the month of September. The individual dissolved oxygen value was as low as 0.2 ml|1 during the peak period of 'bloom' indicating depletion of oxygen. especially during the early mornings between 0400 to 0600 hrs. Low oxygen content was observed during August also when the surf water was turbid (Table 1).

The salinity of the surf waters fluctuated between 15.9 to 35.7 ppm. The lowest salinity was observed during August, during S.W. monsoon. However, the lowest average monthly salinity was 27.8 ppm during June and the highest average monthly salinity was 33.8 ppm during January. It was observed that the salinity ranged between 28.0 to 31.8 ppm the monsoon months from June to Steptember and then rising to 32.0 to 33.8 ppm.

The temperature of the surface ranged between 24°C to 34°C, the lowest being in September and the highest in April. In August 1975 the average monthly temperature was 25°C and in April it was 34°C. But during the next year the lowest average monthly temperature was 24°C, in July, and the highest temperature was 32°C, in March. But during 1977 the lowest temperature of 24°C was observed in September and the highest temperature of 32°C in May. The average monthly temperature for the three year period was between 27.4°C in September to 31.6°C in April (Table 1).

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